

REMARKS

Applicants have amended their claims in order to further clarify the definition of various aspects of the present invention. Specifically, Applicants have incorporated the subject matter of each of claims 7, 13 and 14 into claim 1. In light thereof, claims 7, 13 and 14 have been cancelled without prejudice or disclaimer; additionally, claim 12 has been cancelled without prejudice or disclaimer. Claim 1 has been further amended to delete the word "mainly", such that the component (A) now recites an alkylene oxide adduct of xylylenediamine.

The rejections of Applicants' previously considered claims under the first and second paragraphs of 35 USC 112, set forth in Items 4 and 6 on pages 2 and 3 of the Office Action mailed October 4, 2005, are noted. These rejections are respectfully traversed especially insofar as applicable to the claims as presently amended. Thus, claim 1 has been amended to delete the word "mainly" from recitation of the alkylene oxide adduct of xylylenediamine. As indicated by the Examiner in the paragraph bridging pages 2 and 3 of the Office Action mailed October 4, 2005, Applicants' specification gives alkylene oxide adduct of xylylenediamine as an example for component (A). In view of deletion of the word "mainly" from claim 1, it is respectfully submitted that the rejections of the present claims under the first and second paragraphs of 35 USC 112 are moot.

Applicants respectfully submit that all of the claims presented for consideration by the Examiner patentably distinguish over the teachings of the documents applied by the Examiner in rejecting claims in the Office Action mailed October 4, 2005, that is, the teachings of European Patent Application No. 1,081,170 (which the Examiner has designated as Tawa, et al.) and Japanese Patent

Document No. 58-204018 (which the Examiner has designated as Otani, et al.), under the provisions of 35 USC 103.

It is respectfully submitted that these references as applied by the Examiner would have neither taught nor would have suggested such a gas-barriering coated film as in the present claims, including, inter alia, wherein the gas barriering layer thereof includes a polyurethane resin-cured material formed from a composition comprising an alkylene oxide adduct of xylylenediamine (A) and an organic polyisocyanate compound (B), the organic polyisocyanate compound (B) being further defined, and wherein the alkylene oxide of the alkylene oxide adduct is an alkylene oxide having 2-4 carbon atoms, and a ratio of the number of isocyanate groups in the organic polyisocyanate compound (B) to the sum of the number of hydroxyl groups and amino groups in the alkylene oxide adduct of xylylenediamine (A) is in a range of 0.9-2.5. See claim 1.

Moreover, it is respectfully submitted that the teachings of the applied documents would have neither taught nor would have suggested such gas-barriering coated film as in the present claims, having features as discussed previously in connection with claim 1, and further including, inter alia, wherein the alkylene oxide adduct of xylylenediamine (A) and the organic polyisocyanate compound (B) contain compounds which can form the skeletal structure represented by Formula (1) in reacting (A) with (B); and/or wherein the flexible polymer film or the inorganic-deposited polymer film upon which the gas barriering layer is coated is a film selected from the group set forth in claims 11 and 15.

The present invention is directed to a non-halogen based, gas-barriering coated film, which can suitably be used for packing materials for foods and medicines.

As described in the paragraph bridging pages 2 and 3 of Applicants' specification, a gas-barriering film having a polyurethane resin with a gas barriering property has been previously disclosed. However, this polyurethane resin does not have an adhesive property between films; and, accordingly, when a gas barriering property is required in packing materials, an additional adhesive material has to be applied, so that a laminated film is disadvantageous in terms of production costs and in terms of increased thickness.

Against this background, Applicants provide a gas-barriering coated film having excellent gas-barriering properties, transparency, bending resistance and retort treating resistance. Moreover, the film has good adhesive properties, due to the good adhesive property of the gas barriering layer. Thus, an additional adhesive layer is not required. Applicants have found that by utilizing the gas barriering layer as in the present claims, including the alkylene oxide adduct of xylylenediamine and the recited organic polyisocyanate compound (B), the alkylene oxide of the alkylene oxide adduct being an alkylene oxide having 2-4 carbon atoms, and with a ratio of number of isocyanate groups in the compound (B) to the sum of hydroxyl and amino groups in the compound (A) being in a range of 0.9 to 2.5, objectives according to the present invention are achieved, providing an adhesive having good gas barrier properties and other properties. Thus, note, for example, the first full paragraph on page 9 of Applicants' specification, describing that for providing a higher gas barriering property and better adhesive property, an alkylene oxide having preferably 2-4 carbon atoms is utilized in the alkylene oxide adduct. Note also the paragraph bridging pages 16 and 17 of Applicants' specification, describing that preferred results are achieved when the ratio of number of isocyanate groups in compound (B)

to the sum of the number of hydroxyl and amino groups in the compound (A) fall in a range of 0.9-2.5.

Tawa, et al. discloses a gas barrier polyurethane resin useful as a film, a sheet or a molding material. See paragraph [0001] of Tawa, et al. This patent document discloses that the gas barrier polyurethane resin has total concentration of urethane and urea groups that is not less than 15% by weight, and that such polyurethane resin can be prepared from, e.g., an aromatic, aliphatic, araliphatic or alicyclic diisocyanate as its diisocyanate component and a C₂₋₈ alkylene glycol as its diol component. See paragraphs [0011] and [0012] on page 3 of this patent document. Note also paragraphs [0014]-[0017] on page 3, and paragraphs [0041] and [0045] on page 6, of Tawa, et al. This patent document discloses that the polyurethane resin may be used as a single-layered filmy article or as a multi-layered article constituted of a base and layer(s) formed thereon, and that at least one side of the base film may be provided with an inorganic layer. See paragraphs [0058], [0059] and [0064] on page 8 of Tawa, et al. Note also paragraph [0068] on page 9 of Tawa, et al.

As can be seen from the foregoing, as well as from a full review of this document, Tawa, et al. is deficient, with respect to the presently claimed gas-barriering coated film, in not disclosing the gas barriering layer formed from a composition comprising an alkylene oxide adduct of xylylenediamine (A) and the specified organic polyisocyanate compound (B), with the alkylene oxide of the alkylene oxide adduct having 2-4 carbon atoms; with at least 25% by weight or more of the skeletal structure represented by Formula (1) being contained in the resin-cured material; and with a ratio of the number of isocyanate groups in the compound (B) to the sum of the number of hydroxyl and amino groups in the compound (A)

being in a range of 0.9 to 2.5; and/or the other features of the present invention as discussed previously, and advantages thereof.

It is respectfully submitted that the additional teachings of Otani, et al. would not have rectified the deficiencies of Tawa, et al., such that the presently claimed invention as a whole would have been obvious to one of ordinary skill in the art.

Otani, et al. discloses a rigid polyurethane resin excellent in heat resistance, prepared by reacting an alkylene oxide adduct of xylylenediamine along or together with a different polyfunctional polyol, with an aromatic polyisocyanate compound. This patent document discloses that the rigid polyurethane resin is excellent in heat resistance.

Initially, it is respectfully submitted that the teachings of Otani, et al. are not properly combinable with the teachings of Tawa, et al. Thus, Tawa, et al. is directed to a gas-barrier urethane resin, wherein the polyurethane resin thereof is disclosed as a gas barrier having properties against water vapor, oxygen, aromatics and others. In contrast, Otani, et al. is directed to a rigid polyurethane resin, excellent in heat resistance. It is respectfully submitted that one of ordinary skill in the art involved in Tawa, et al., that is, gas barrier polyurethane resins, would not have looked to the teachings of Otani, et al. In other words, it is respectfully submitted that these references are directed to different technologies, and address different problems, and thus are directed to non-analogous arts.

In any event, it is respectfully submitted that the Examiner has pointed to no proper motivation for combining the teachings of Tawa, et al. and Otani, et al. In this regard, it is again emphasized that Tawa, et al. is concerned with a gas barrier polyurethane resin. In contrast, Otani, et al. is directed to a heat-resistant polyurethane resin. Absent hindsight use of Applicants' disclosure, which of course

is improper under the 35 USC 103, it is respectfully submitted that there would have been no proper motivation for combining the teachings of Otani, et al., disclosing a rigid, heat-resistant polyurethane resin, with the teachings of Tawa, et al. Absent such motivation, it is respectfully submitted that the combined teachings of references as applied by the Examiner is in error.

In any event, even assuming, arguendo, that the teachings of Tawa, et al. and of Otani, et al. were properly combinable, it is respectfully submitted that such combined teachings would have neither disclosed nor would have suggested the presently claimed subject matter, including, inter alia, the skeletal structure represented by Formula (1) and amount thereof contained in the resin-cured material, and/or wherein the alkylene oxide of the alkylene oxide adduct is an alkylene oxide having 2-4 carbon atoms; and/or ratio of the number of isocyanate groups in compound (B) to the sum of the number of hydroxyl and amino groups in the compound (A), as in the present claims, and advantages of these features; and/or further features of the present invention as in the present claims and discussed previously, and advantages thereof.

It is respectfully submitted that the experimental data in Applicants' specification supports unobviousness of the presently claimed subject matter, including, inter alia, concentration of the skeletal structure represented by Formula (1). Such evidence in Applicants' specification must be considered in determining unobviousness. See In re DeBlauwe, 222 USPQ 191 (CAFC 1984). In particular, note Examples 1-9, on pages 27-31 of Applicants' specification, particularly Example 5 on page 29, and compare with Comparative Example 2 on page 32. Note results shown in Table 1 on page 32 of Applicants' specification. It is respectfully submitted that this shows the unexpectedly better results, including, e.g., unexpectedly better

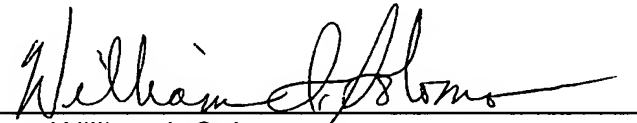
adhesive property, achieved according to the present invention, having amount of skeletal structure represented by Formula (1) as in the present claims, supporting a conclusion of unobviousness of the presently claimed subject matter.

In view of the foregoing comments and amendments, reconsideration and allowance of all claims presently in the application are respectfully requested.

Applicants request any shortage of fees due in connection with the filing of this paper be charged to the Deposit Account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (case 396.43428X00) and credit any overpayment to such Deposit Account.

Respectfully submitted,

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